

REC'D/ACT/PTO 31 AUG 2004 *W/H*  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

NEIDLE, S. et al. Atty. Ref.: 620-320

Serial No. 10/501,474 Group: Unassigned

Filed: July 14, 2004 Examiner: Unassigned

For: THERAPEUTIC ACRIDONE AND ACRIDINE  
COMPOUNDS

\* \* \* \* \*

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

August 31, 2004

Sir:

**INFORMATION DISCLOSURE STATEMENT**

1. **PTO-1449 Pursuant to 37 CFR 1.97(b)**  
[within 3 months of filing or prior to 1st Office Action on the merits] **N/C**

2.(a) **Statement Pursuant to 37 CFR 1.97(c)**  
[before Final Office Action or Allowance (requires Rule 97(e)  
Statement or Rule 17(p) fee)] **N/C**

2 .(b) **Fee Payment Pursuant to 37 CFR 1.97(c)**  
[before Final Office Action or Allowance (requires Rule 97(e)  
Statement or Rule 17(p) fee)] **\$180.00**

3. **Pursuant to 37 CFR 1.97(d)**  
[after Final Office Action or Allowance (requires Rule 97(e)  
Statement and Rule 17(p) fee), but before final fee payment] **\$180.00**

The following are submitted in the above-identified application in compliance with 37 C.F.R. §§ 1.97 and 1.98:

4. A list of documents on Form PTO-1449 together with copies of each identified document and a translation or a concise explanation of each non-English language document (such as a Search Report) is enclosed herewith.

This paper is submitted in accordance with:

5. 37 CFR 1.97(b): [within 3 months of filing or prior to 1st Office Action]

6. 37 CFR 1.97(c): [before Final Office Action or Allowance, whichever is earlier]; and

a) The required Statement made in item 8 below; or

b) The \$180.00 fee specified in 37 CFR §1.17(p) for submission of this Information Disclosure Statement is authorized in item 9 below.

7. 37 CFR §1.97(d): [after Final Office Action or Allowance (requires Rule 97(e) Statement and Rule 17(p) fee), but before final fee payment]; and

a) The fee (\$180.00) required by 37 CFR §1.17(p) is submitted herewith; and

b) The required Statement is stated in item 8 below.

8. Statement under 37 CFR 1.97(e)

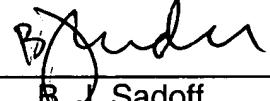
a) The undersigned attorney of record hereby certifies under 37 C.F.R. §1.97(e) that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement (each item contained in this IDS was the first citation of that item by a foreign patent office in a counterpart foreign application which occurred no more than three months prior to the filing of this IDS); or

b) No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this Statement, after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

9. Please charge all deficiency fees associated with the submission of this Information Disclosure Statement and any other fees applicable to this application to Deposit Account No. 14-1140. An original and one (1) copy of this document are enclosed.

Respectfully submitted,  
NIXON & VANDERHYE P.C.

By: \_\_\_\_\_

  
B.J. Sadoff

Reg. No. 36,663

1100 North Glebe Road, 8th Floor  
Arlington, VA 22201-4714  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100

<b>INFORMATION DISCLOSURE</b>		ATTY. DOCKET NO.	SERIAL NO.				
<b>CITATION</b>		620-320	10/501,474				
<b>APPLICANT</b>							
NEIDLE, S. et al.							
(Use several sheets if necessary)		FILING DATE	GROUP				
		July 14, 2004	Unassigned				
<b>U.S. PATENT DOCUMENTS</b>							
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	FILING DATE CLASS    SUBCLASS    IF APPROPRIATE			
<b>FOREIGN PATENT DOCUMENTS</b>							
					TRANSLATION		
	DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	YES	NO
	WO 02/08193 A1	01/2002	WIPO			X	
	DE 488 890	01/1930	Germany			Abstract	
<b>OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)</b>							
	Alberti, P., et al., 2002, "Benzindoloquinolines Interact with DNA Tetraplexes and Inhibit Telomerase," <u>Biorganic &amp; Medicinal Chemistry Letters</u> , Vol. 12, pp. 1071-1074.						
	Autexier, C., 1999, "Telomerase as a Possible Target for Anticancer Therapy," <u>Chemistry &amp; Biology</u> , Nov. 1999, Vol. 6, pp. R299-R303.						
	Bogert, M.T., et al., 1930, "Researches in the Acridine Series. The Synthesis of Isomers of Proflavine and of Neutral Acriflavine," <u>Collect. Czech. Chem. Comm.</u> , Vol. 2, pp. 383-395.						
	Bostock-Smith, C.E., et al., 1999, "Molecular Recognition between a New Pentacyclic Acridinium Salt and DNA Sequences Investigated by Optical Spectroscopic Techniques, Proton Nuclear Magnetic Resonance Spectroscopy, and Molecular Modeling," <u>Biochemistry</u> , Vol. 38, No. 21, pp. 6723-6731.						
	Cain, B.F., et al., 1974, "Potential Antitumor Agents. 14. Acridylmethanesulfonanilides," <u>J. Med. Chem.</u> , Vol. 17, No. 9, pp. 922-930.						
	Cain, B.F., et al., 1976, "Potential Antitumor Agents. 17. 9-Anilino-10-methylacridinium salts," <u>J. Med. Chem.</u> , Vol. 19, No. 6, pp. 772-777.						
	Cain, B.F., et al., 1976, "Potential Antitumor Agents. 19. Multiply Substituted 4'-(9-Acridinylamino)methanesulfonanilides," <u>J. Med. Chem.</u> , Vol. 19, No. 9, pp. 1124-1129.						
	Carrasco, C., et al., 2002, "Tight Binding of the Antitumour Drug Ditercalcinium to Quaduplex DNA," <u>ChemBioChem</u> , Vol. 3, pp. 1235-1241.						
	Corey, D.R., 2002, "Telomerase Inhibition, Oligonucleotides, and Clinical Trials," <u>Oncogene</u> , Vol. 21, pp. 631-637.						
	Denny, W.A., et al., 1982, "Potential Antitumour Agents. 36. Quantitative Relationships between Experimental Antitumour Activity, Toxicity, and Structure for the General Class of 9-Anilinoacridine Antitumor Agents," <u>J. Med. Chem.</u> , Vol. 25, pp. 276-315.						
	Gamage, S.A., et al., 1994, "Synthesis and in Vitro Evaluation of 9-Anilino-3,6-diaminoacridines Active Against a Multidrug Resistant Strain of the Malaria Parasite <u>Plasmodium falciparum</u> ," <u>J. Med. Chem.</u> , Vol. 37, No. 10, pp. 1486-1494.						
	Gimenez-Arnau, E. et al., 1998, "Antitumour Polycyclic Acridines, Part 2," <u>Anti-Cancer Drug Design</u> , Vol. 13, pp. 125-143.						
	Gimenez-Arnau, E., et al., 1998, "Antitumour Polycyclic Acridines, Part 4," <u>Anti-Cancer Drug Design</u> , Vol. 13, pp. 431-451.						

\*Examiner \_\_\_\_\_ Date Considered \_\_\_\_\_

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

<b>INFORMATION DISCLOSURE</b>		ATTY. DOCKET NO.	SERIAL NO.			
<b>CITATION</b>		620-320	10/501,474			
		APPLICANT				
(Use several sheets if necessary)		NEIDLE, S. et al.				
		FILING DATE	GROUP			
		July 14, 2004	Unassigned			
<b>U.S. PATENT DOCUMENTS</b>						
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<b>FOREIGN PATENT DOCUMENTS</b>				TRANSLATION		
	DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	YES NO
<b>OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)</b>						
	Goldberg, A.A. and Kelly, W., 1946, "29. Synthesis of Diaminoacridines. Part I," <u>J. Chem. Soc.</u> , p. 102-111.					
	Goldstein, H., and de Simo, M., 1927, "Quelques derives de l'acide phenyl-anthranilique III," <u>Helv. Chim. Acta.</u> , Vol. 10, p. 603-606.					
	Gomez, D., et al., 2002, "Detection of Telomerase Inhibitors Based on G-Quadruplex Ligands by a Modified Telomeric Repeat Amplification Protocol Assay," <u>Cancer Research</u> , Vol. 62, pp. 3365-3368.					
	Gowan, S.M., et al., 2002, "A G-Quadruplex-Interactive Potent Small-Molecule Inhibitor of Telomerase Exhibiting in Vitro and in Vivo Antitumour Activity," <u>Molecular Pharmacology</u> , Vol. 61, No. 5, pp. 1154-1162.					
	Hagan, D.H., et al., 1997, "Antitumour Polycyclic Acridines, Part 1," <u>J. Chem. Soc., Perkin Trans. 1</u> , pp. 2739-2746.					
	Hagan, D.H., et al., 1998, "Antitumour Polycyclic Acridines, Part 3," <u>J. Chem. Soc., Perkin Trans. 1</u> , p. 915-923.					
	Harrison, R.J., et al., 1999, "Human Telomerase Inhibition by Substituted Acridine Derivatives," <u>Bioorganic &amp; Medicinal Chemistry Letters</u> , Vol. 9, pp. 2463-2468.					
	Herbert, B.-S., et al., 2001, "Telomerase and Breast Cancer," <u>Breast Cancer Research</u> , Vol. 3, pp. 146-149.					
	Hoffmann, S., et al., 1986, "Synthese bisbasisch-substituierter Acridine als potentielle Nucleinsaureeffektoren," <u>Zeitschrift fur Chemie</u> , Vol. 26, No. 9, pp. 331-332.					
	Julino, M., et al., 1998, "Antitumour Polycyclic Acridines, Part 5," <u>J. Chem. Soc., Perkin Trans. 1</u> , pp. 1677-1684.					
	Kern, J.T., et al., 2002, "The Relationship between Ligand Aggregation and G-Quadruplex DNA Selectivity in a Series of 3,4,9,10-Perylenetetracarboxylic Acid Diimides," <u>Biochemistry</u> , Vol. 41, pp. 11379-11389.					
	Kim, M.-Y., et al., 2002, "Telomestatin, a Potent Telomerase Inhibitor That Interacts Quite Specifically with the Human Telomeric Intramolecular G-Quadruplex," <u>J. Amer. Chem. Soc.</u> , Vol. 124, No. 10, pp. 2098-2099.					
	Kim, N.W., et al., 1994, "Specific Association of Human Telomerase Activity with Immortal Cells and Cancer", <u>Science</u> , Vol. 266, pp. 2011-2015.					
	Klopman, G., et al., 1987, "Computer-Automated Structure Evaluation of Antiluekemic 9-Anilinoacridines," <u>Molecular Pharmacology</u> , Vol. 31, pp. 457-476.					
	Korolev, B.A., et al., 1976, "Preparation of 2-Aminoacridan by the Reduction of 2-Amino-9-Acridanone with Baborane," <u>J. Gen. Chem. USSR (Engl. Trans.)</u> , Vol. 46, pp. 2250-2252.					
	Korolev, B.A., et al., 1977, "Acridines. II. Selective Reduction of Nitro Derivatives of 2-Amino-9-Acridanone with Baborane," <u>J. Gen. Chem. USSR (Engl. Trans.)</u> , Vol. 47, pp. 2118-2122.					
	Li, J.-L., et al., 2001, "Inhibition of the Bloom's and Werner's Syndrome Helicases by G-Quadruplex Interacting Ligands", <u>Biochemistry</u> , Vol. 40, pp. 15194-15202.					
*Examiner			Date Considered			

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

Form PTO-FB-A820 (Also PTO-1449)

<b>INFORMATION DISCLOSURE</b>		ATTY. DOCKET NO.	SERIAL NO.			
<b>CITATION</b>		620-320	10/501,474			
		APPLICANT				
(Use several sheets if necessary)		NEIDLE, S. et al.				
		FILING DATE	GROUP			
		July 14, 2004	Unassigned			
<b>U.S. PATENT DOCUMENTS</b>						
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<b>FOREIGN PATENT DOCUMENTS</b>				TRANSLATION		
	DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	YES NO
<b>OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)</b>						
	Lorente, A., et al., 1996, "Syntheses of Imidazole-Acridine Conjugates as Ribonuclease A Mimics," <u>Tetrahedron Letters</u> , Vol. 37, No. 25, pp. 4417-4420.					
	Matsumura, K., 1929, "The Synthesis of Certain Acridine Compounds," <u>J. Amer. Chem. Soc.</u> , Vol. 51, pp. 816-820.					
	Mergny, J.-L., et al., 2002, "Natural and Pharmacological Regulation of Telomerase," <u>Nucleic Acids Research</u> , Vol. 30, No. 4, pp. 839-865.					
	Moisan, M., et al., 1993, "New $\alpha,\omega$ -Diamido and $\alpha,\omega$ -Diamino Mono- and Di-Bridged Acridine Dimers," <u>Monatshefte fur Chemie</u> , Vol. 124, pp. 23-35.					
	Neidle, S., et al., 1999, "Telomerase as an Anti-Cancer Target: Current Status and Future Prospects," <u>Anti-Cancer Drug Design</u> , Vol. 14, pp. 341-347.					
	Neidle, S., et al., 2002, "Telomere Maintenance as a Target for Anticancer Drug Discovery," <u>Nature Reviews</u> , Vol. 1, May 2002, pp. 383-393.					
	Parkinson, G.N., et al., 2002, "Crystal structure of parallel quadruplexes from human telomeric DNA," <u>Nature</u> , Vol. 417, 20 June 2002, pp. 876-880.					
	Perry, P.J., et al., 1998a, "1,4- and 2,6-Disubstituted Amidoanthracene-9,10-dione Derivatives as Inhibitors of Human Telomerase," <u>J. Med. Chem.</u> , Vol. 41, No. 17, pp. 3253-3260.					
	Perry, P.J., et al., 1998b, "Human Telomerase Inhibition by Regioisomeric Disubstituted Amidoanthracene-9,10-diones," <u>J. Med. Chem.</u> , Vol. 41, No. 24, pp. 4873-4884.					
	Perry, P.J., et al., 1998c, "Telomeres and Telomerase: Targets for Cancer Chemotherapy?," <u>Exp. Opin. Ther. Patents</u> , Vol. 8, No. 12, pp. 1567-1586.					
	Perry, P.J., et al., 1999a, "Design, Synthesis and Evaluation of Human Telomerase Inhibitors Based Upon a Tetracyclic Structural Motif," <u>Anti-Cancer Drug Design</u> , Vol. 14, pp. 373-382.					
	Perry, P.J., et al., 1999b, "2,7-Disubstituted Amidofluorenone Derivatives as Inhibitors of Human Telomerase," <u>J. Med. Chem.</u> , Vol. 42, No. 14, pp. 2679-2684.					
	Read et al., 24 April 2001, "Structure-based design of selective and potent G quadruplex-mediated telomerase inhibitors," <u>Proceedings of the National Academy of Science</u> , Vol. 98, No. 9, pp. 4844-4849.					
	Read, M.A., et al., 1999, "Molecular Modeling Studies on G-Quadruplex Complexes of Telomerase Inhibitors: Structure-Activity Relationships," <u>J. Med. Chem.</u> , Vol. 42, pp. 4538-4546.					
	Reddel, R.R., 2003, "Alternative Lengthening of Telomeres, Telomerase, and Cancer", <u>Cancer Letters</u> , 194, pp. 155-162.					
	Rezler, E.M., et al., 2002, "Telomeres and Telomerases as Drug Targets," <u>Current Opinion in Pharmacology</u> , Vol. 2, pp. 415-423.					

\*Examiner \_\_\_\_\_ Date Considered \_\_\_\_\_

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

Form PTO-FB-A820 (Also PTO-1449)

<b>INFORMATION DISCLOSURE</b>		ATTY. DOCKET NO.	SERIAL NO.	
<b>CITATION</b>		620-320	10/501,474	
		APPLICANT		
(Use several sheets if necessary)		NEIDLE, S. et al.		
		FILING DATE	GROUP	
		July 14, 2004	Unassigned	
<b>U.S. PATENT DOCUMENTS</b>				
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	FILING DATE IF APPROPRIATE
<b>FOREIGN PATENT DOCUMENTS</b>				
DOCUMENT		DATE	COUNTRY	TRANSLATION
<b>OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)</b>				
	Riou, J.F., et al., 2002, "Cell Senescence and Telomere Shortening Induced by a New Series of Specific G-Quadruplex DNA Ligands," <u>Proc. Nat. Acad. Sci.</u> , Vol. 99, No. 5, pp. 2672-2677.			
	Sharma, S., et al., 1997, "Preclinical and Clinical Strategies for Development of Telomerase and Telomere Inhibitors," <u>Annals of Oncology</u> , Vol. 8, pp. 1063-1074.			
	Shay, J.W., et al., 2002, "Telomerase: A Target for Cancer Therapeutics," <u>Cancer Cell</u> , Vol. 2, pp. 257-265.			
	Sun, D., et al., 1997, "Inhibition of Human Telomerase by a G-Quadruplex-Interactive Compound," <u>J. Med. Chem.</u> , Vol. 40, pp. 2113-2116.			
	Urquidi, V., et al., 1998, "Telomerase in Cancer: Clinical Applications," <u>Ann. Med.</u> , Vol. 30, pp. 419-430.			
	Yale, H.L., 1955, "3-Chloro-10-dialkylaminoalkylphenothiazines," <u>J. Amer. Chem. Soc.</u> , Vol. 77, pp. 2270-2272.			
*Examiner		Date Considered		

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

Form PTO-FB-A820 (Also PTO-1449)